

## Project Description with Best Management Practices/Environmental Constraints PSN 7956013, Base Seattle Pier 36B Repairs

### Project Purpose & Need

The purpose of the project is to conduct long-needed repairs to Pier 36 B at Base Seattle. The existing Pier 36B no longer has sufficient strength to moor the largest of the icebreakers homeported at Base Seattle. Marine borer infestation has caused damage to every pile in the original structure, and more than 40% of piles are missing some of their original cross sections. The lack of structural stability presents an acute, long-term safety concern during anticipated seismic events. The initial load limit at Pier 36B was 80,000 lbs. gross vehicle weight (GVW). Current load limits on 82% of Pier 36B have been reduced to 21,000 lbs. GVW. These reduced load limits are not sufficient to support USCG service vehicles and makes dockside maintenance very difficult and inefficient. These reduced load limits also present a safety hazard because fire and maintenance trucks do not have direct access to the pier. The distance from the pier to truck access points is an environmental concern, especially during the removal of used oil because of the increased potential for an oil spill (USCG 2009). This distance also decreases operational efficiency during refuse removal from vessels because refuse must be removed by hand. Regular maintenance of the sheet pile bulkhead is necessary to sustain its structural integrity.



Figure 1: USCG Base Seattle

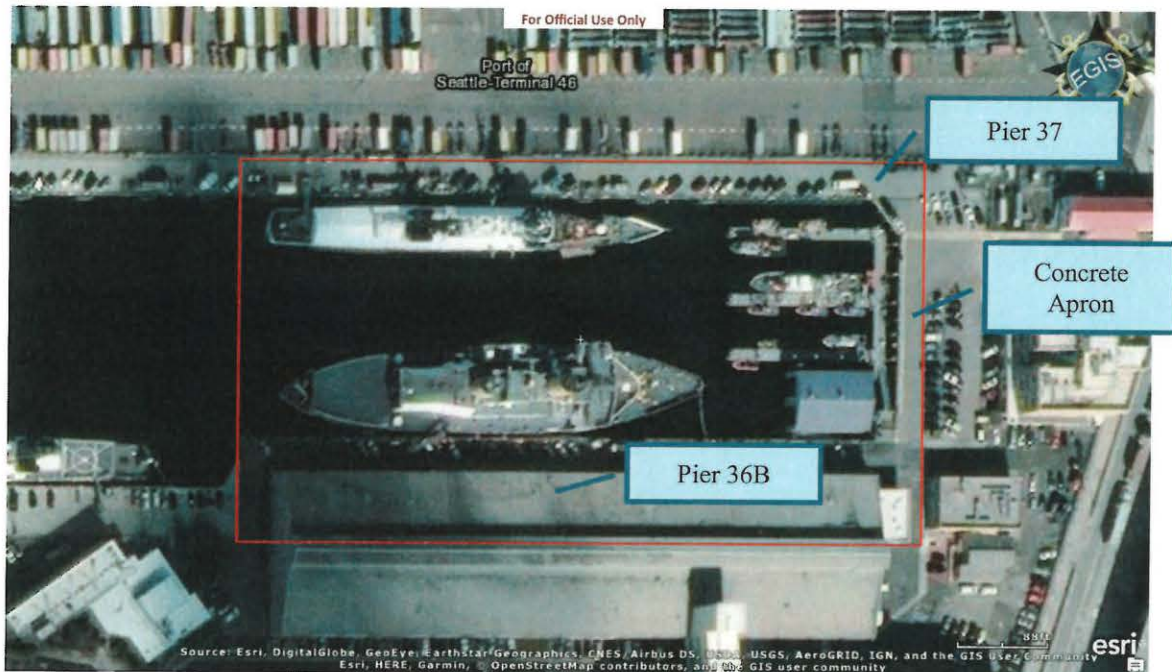


Figure 2: Proposed Project Location

## Overview

The project would involve setting new piles to replace or support deteriorated piles, providing new or replacement jackets filled with epoxy to stabilize damaged piles, and resurfacing the sheet steel bulkhead at the head of the berthing. Specific project elements can be described as follows:

- Set new “sister” timber piles to support deteriorated piles using a vibratory hammer (2 piles).
- Remove existing fender piles and replace with new piles using a vibratory hammer (26 piles).
- Remove shotcrete from existing timber piles and provide new structural fiber-reinforced polymer (FRP) jackets (75 piles). Jackets would then be filled with epoxy.
- Install new structural FRP jackets on existing timber piles (27 piles). Jackets would then be filled with epoxy.
- Clean surface and repaint 2000 SF of steel sheet pile bulkhead on Pier 37 and concrete apron at head of berthing.

Project schedule: Work would be conducted during the appropriate work window, July 16, 2018 to February 15, 2019.

## Project specifics

*Access to Pier 36B work area:* Work would be primarily conducted from a barge-mounted crane next to the pier. Asphalt and timber decking would be removed to provide access to the space under the pier.

*Piles to be removed:* Piles would be pulled with a vibratory hammer. Piles would be cut into pieces within a containment area and disposed of at an appropriate upland facility. Piles would not be re-used.

*New and replacement piles:* New or replacement 16-inch Douglas fir piles, treated with ACZA, would be set using a vibratory hammer. The top of the pile would be secured to the pile cap with steel straps.

*Pile Jackets:* Divers would clean piles of marine growth with hand tools. After cleaning the pile, fiberglass forms would be fastened to the pile and would extend from 2 feet below the mudline to above MHW. The tremie method of filling the jackets with epoxy would be used.

*Sheet Steel Bulkheads:* This work would be done at a negative low tide. The steel would be power-washed or scraped, and then repainted. The coating would be hydrophobic epoxy paint applied to dry surfaces to a thickness of 16 mils (0.4 mm).

### **Best Management Practices**

The project is located in the Harbor Island Superfund Site and is subject to significant scrutiny from the resource agencies. The following requirements will help ensure limited adverse effects on water quality and sensitive biological resources:

1. All work shall occur during the recommended in-water work window of July 16th to February 15th. When conditions permit, intertidal work shall be conducted in the dry during low tides.
2. Contractor shall submit a Health and Safety Plan for the Pier 36B Repairs to the Contracting Officer and Environmental Protection Agency (EPA) for review and approval 30 days prior to beginning construction. Submit the Plan to Ms. Erika Hoffman, (360) 753-9540, Hoffman.Erika@epa.gov, EPA, WA Operations Office, 300 Desmond Drive, Suite 102, Lacey, WA 98503. Contractor shall also notify Mr. Ravi Sanga, 206-553-4092, Sanga.Ravi@epa.gov, 30 days prior to the start of work.
3. A written spill prevention, control, and countermeasures plan shall be prepared for activities that include the use of heavy equipment. The plan shall describe measures to prevent or reduce impacts from accidental leaks or spills, and shall contain a description of all hazardous materials that will be used, proper storage and handling, and monitoring methods. A spill kit shall be available onsite during construction and stored in a location that facilitates immediate deployment if needed.
4. All equipment that operates over water or below MHHW shall be cleaned of accumulated grease, oil, and mud. All leaks shall be repaired prior to arriving on site. Equipment shall be inspected daily for leaks, accumulations of grease, etc., and any identified problems shall be fixed before operating over



water or below MHHW. No solvents shall be used in or over the water during construction.

5. Two oil absorbing floating booms, appropriate for the size of the work area, shall be available onsite whenever heavy equipment operates within 150 feet of open water and there is a potential for hazardous materials to enter surface waters. The booms shall be stored in a location that facilitates immediate deployment in the event of a spill.
6. Fueling and servicing of equipment shall be confined to an established staging area. Spill containment systems must be adequate to contain all fuel leaks.
7. New piles and timbers shall be ACZA treated Douglas fir. Treatment shall comply with the Amendment to the Best Management Practices for the Use of Treated Wood in Aquatic Environments; USA Version – Revised April 17, 2002. Western Wood Preservers Institute. Design measures (i.e. spacing, rub strips) shall be used to prevent abrasion of the treated wood and reduce the potential for the release of contaminants into the aquatic environment. Hydraulic water jets shall not be used to remove or place piles.
8. The Contractor shall use a floating type III silt curtain for this project. It shall be installed around the active work areas prior to start of work. It shall be secured by existing timber piles, cables, anchors, floats and/or weights. The curtain shall remain until all in-water and over-water work in the area is completed and shall be inspected daily and adjusted as necessary to maintain effective containment. Contractor shall maintain a log documenting daily inspections and any repairs required. The contractor shall also deploy oil and debris boom either as part of the silt curtain or separately.
9. To ensure asphalt and wood debris does not enter the water during deck removal activities the Contractor shall place a barrier under the pier to capture any debris (i.e. small work barge, suspended tarp). To ensure debris does not go over the side of the pier the Contractor shall have a barrier (i.e. hay bales or fabric wall) between the work area and the edge of the pier anytime the work area is 20-ft or closer to the edge of the pier.
10. Contractor shall use hand tools to remove marine growth from piles sufficient to properly make repairs. Marine growth removed from the pile shall be captured (i.e. mesh diver bags and pile skirts) and disposed of offsite at an approved upland disposal site. Contractor shall remove old creosote treated timber and pile debris from the work area as it is encountered and when it can be accomplished safely.
11. When pumping epoxy, a steel form/collar shall be placed around the seams where the sleeve meets the piles and secured so that no concrete leaks out of the sleeve. All epoxy shall be contained within the sleeve and not allowed to leak into the water. The volume of epoxy required for each jacket shall be pre-calculated and there shall be two-way communication between divers and top side operators at all times. Top side operators and the divers shall have the ability to immediately shut down pumping if a leak is detected or there is

any question concerning the volume of epoxy pumped. The delivery hose shall have a quick shut off valve at the point of delivery for the diver's immediate use and the top side operators shall be able to stop pumping immediately. Additional epoxy pumping requirements are included in the pH monitoring portion of the water quality monitoring requirements (see below).

12. Contractor would accomplish pH monitoring through a combination of monitoring the concrete pumping, physical safeguard controls and taking pH meter readings. The volume of epoxy required for each jacket shall be pre-calculated and there shall be two-way communication between divers and top side operators at all times. Top side operators and the divers shall have the ability to immediately shut down pumping if a leak is detected or there is any question concerning the volume of concrete pumped. The delivery hose shall have a shut off valve at the point of delivery for the diver's immediate use and the top side operators shall be able to stop pumping immediately. If a leak does occur a pH meter reading shall be taken at the point of the leak and the concrete shall be removed from the water. Water shall be removed from the pile jacket at the same rate the epoxy is pumped through the valve located at the bottom of the jacket. The removed water shall be containerized, tested and disposed of properly. Prior to pumping epoxy the pH meter shall be used to obtain a pre-pumping pH reading 2 feet above the mudline and within 2 feet of the pile jacket. Epoxy pumping shall end based on the volume delivered, manual gauging and visual observations with a minimum of 4 inches of sea water in the jacket covering the concrete. Epoxy pumping shall be stopped immediately if there is any question concerning volume, rate of delivery or there is a leak. A pH meter reading shall be taken at the point of any leakage. A monitoring report that identifies the pile location, volume of epoxy delivered, pre-pumping pH reading and pH readings at any points of leakage shall be maintained. The log shall include detailed discussion concerning any leakage. The cause, action taken and measures to correct shall be discussed. All leakage shall be reported immediately to the Coast Guard representative.
13. Underwater pile cutting shall occur during the lowest practical tide condition and at slack tide whenever possible. A containment basin shall be constructed of durable plastic sheeting with sidewalls supported by hay bales or support structure to contain all sediment from removed piles. Water run-off may return to the waterway. Pile cutting shall occur outside the water whenever possible and piles shall be cut into 4-ft or less lengths for transport and disposal. Cut-up piling, debris, sediments, construction residue and plastic sheeting from the containment basin shall be packed into a container and disposed of at Rabanco/Seattle, Weyco facility at Longview Washington, or to another facility complying with federal and state regulations. Contractor shall document disposal with a statement of compliance.
14. Mudline excavation around piles to accommodate repairs shall be done by hand and the removed sediment shall be used as backfill. Clean sand shall not be used.

15. When preparing the bulkhead for repainting, marine growth, algae, and rust shall be removed by hand as necessary and all debris contained and disposed of in an upland facility. The contractor shall implement a containment system to prevent any contaminants from entering the water during cleaning or repainting of the bulkhead.
16. Only a vibratory hammer would be used to set or remove piles. When the vibratory hammer is used, for either removal or placement of piles, it would "ramp up" at lower power for 15 seconds, pause for 1 minute, repeat that sequence, and then start up continuous driving, in order to give wildlife time to clear the area.